



8.4" LCD DISPLAY

SLIMLINE

BASE PART NUMBER

8402

PATENT 5,271,590 DES. PATENT 360,126



WWW.
rosenaviation
.com

**CORPORATE
HEADQUARTERS**

1020 Owen Loop South
Eugene, OR 97402 USA
541-342-3802

**NATIONAL
SALES OFFICE**

8 Shackleford Plaza, Suite 201
Little Rock, AR 72211 USA
501-225-8673

8402 TECHNICAL
MANUAL

WWW.
rosenaviation
.com



Table of Contents

Introduction and Display Overview	3
Display Diagram	4
Pinouts	7
External Control Interface	8
Operation	9
Specifications	12
DO-160D Compliance Matrix	13
Troubleshooting	14
Technician Mode	15
Disclaimer	18



1020 Owen Loop South

Eugene OR 97402

541-342-3802

www.rosenaviation.com

Doc # 9001032 Rev C



Introduction and Display Overview

Welcome to the *8402 Technical Manual* for the 8.4" LCD display. This manual provides an overview of display details including:

- Pinouts
- Installation
- Operation
- Troubleshooting
- Specifications

The 8402 base model includes the following features:

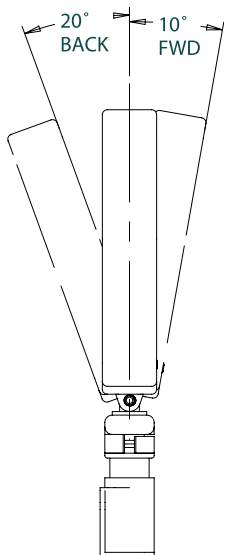
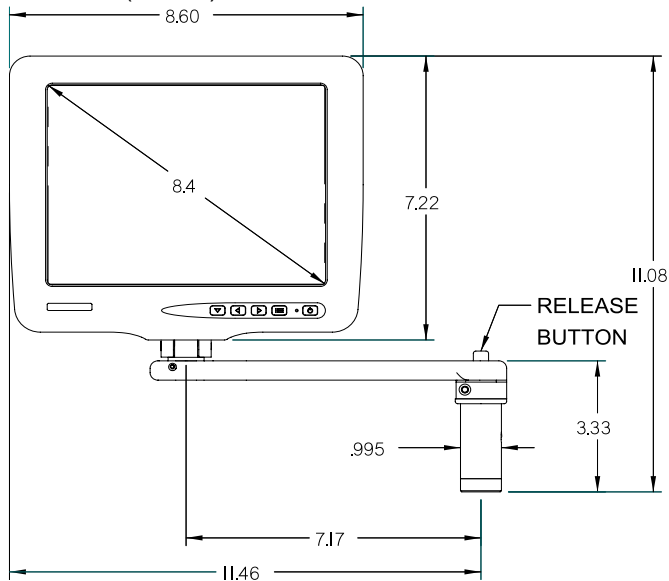
- 8.4" Diagonal Viewing Area
- NTSC/PAL/SECAM/RS170 (Composite video)
- 640 x 480 Screen Resolution (VGA)
- On Screen Display (OSD) Functions
- Status LED
- 28 Volt Operation
- Front Panel Menu Operation

The 8402 series monitor accommodates the following options

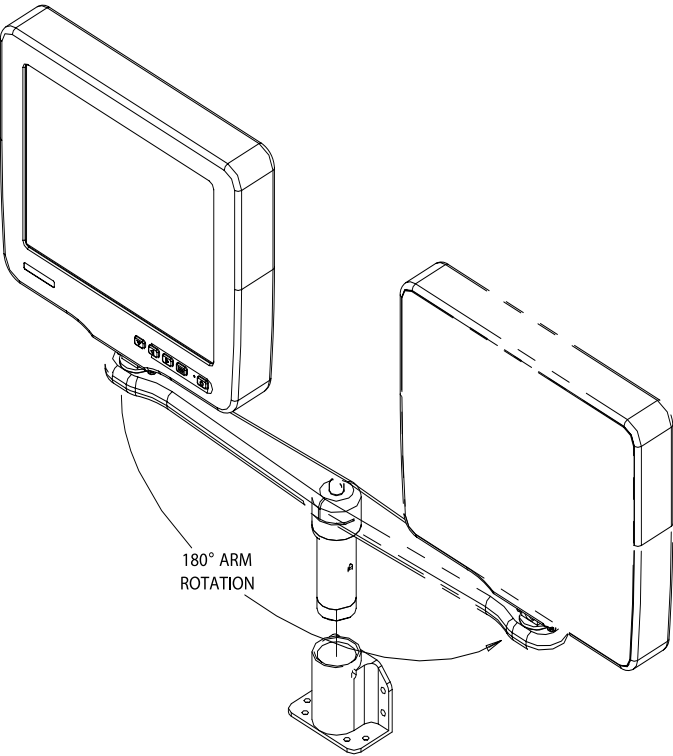
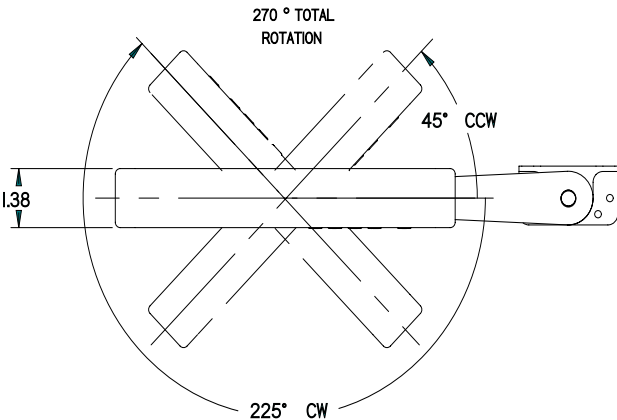
- Front panel buttons
- External 5-button controller 0300-406
(sold separately Bulkhead monitor only)

Display Diagram Arm Mounts

Dimensions (Inches)

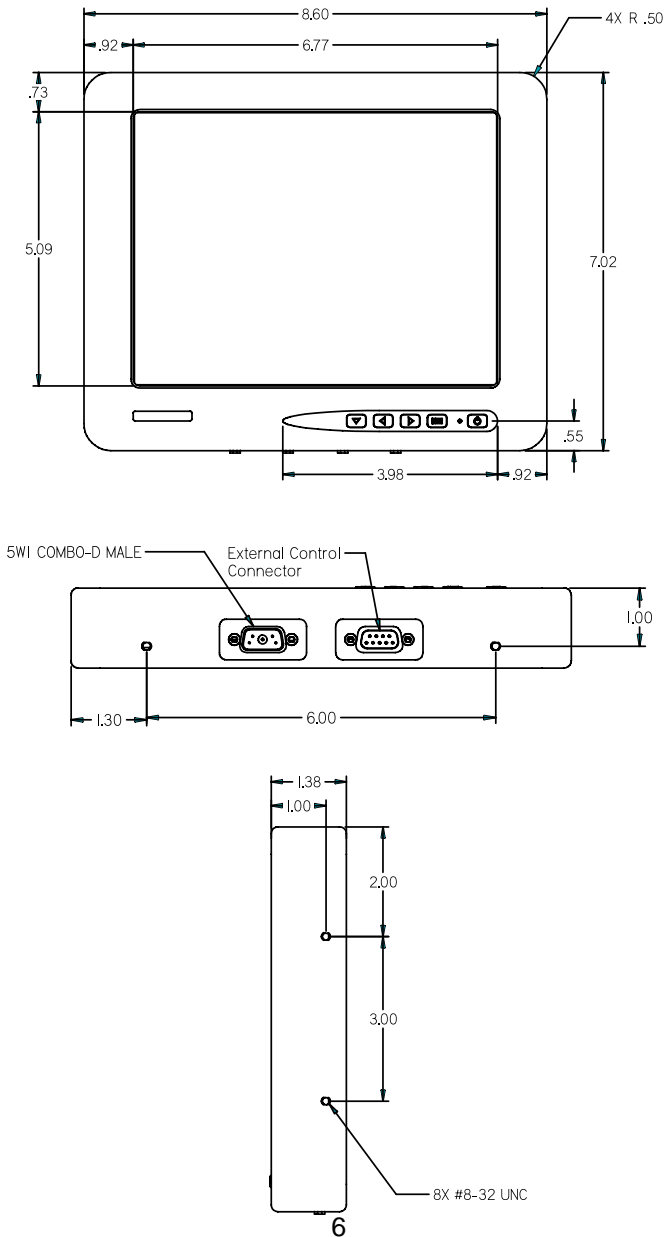


(8402-010 configuration shown) Contact Rosen Aviation sales for other arm options



Display Diagram Bulkhead Mount

Dimensions (Inches)



Pinouts

Slimline Base Receptacle

Model 0100-002 & 0100-004

Connector: 9 Pin Male D-Subminiature

Positronic SDM0000Z

Mate: 9 Pin Female D-Subminiature

Positronic SD9F0000X

Pin #	Monitor Signal
1	Chassis Ground
2	+28V DC
3	DC Return
4	*Conn to pin 5/Select Switch
5	*Conn to pin 4/Select Switch Return
6	Reserved
7	Video Signal Input
8	Video Ground
9	Reserved

Slimline Base Receptacle

Model 0100-005 & 0100-040

Video Connector: BNC Plug, AMP 225396-8 Power Connector:

Female 3 pin, .062" Molex

Mating Video Connector: BNC Jack Mating Power Connector:

Molex 03-06-2033 Mating Power Contact: Molex 02-06-2103

Pin #	Monitor Signal
BNC signal	Video Signal
BNC shield	Video Return
Molex 1	+28V DC
Molex 2	DC Return
Molex 3	Reserved

Slimline Base Receptacle

Model 0100-041 & 0100-042

Connector: 9 Pin Male D-Subminiature

Positronic SDM0000Z

Mate: 9 Pin Female D-Subminiature

Positronic SD9F0000X

Pin #	Monitor Signal
1	Chassis Ground
2	+28V DC Input
3	DC Return
4	*Connected to pin 5/Select Switch
5	*Connected to pin 4/Select Switch Return
6	Reserved
7	Video Signal Input
8	Video Ground
9	Reserved

8402-001 Main Connector Pinout

Connector: 5W1 Combo-D MALE

Mate: 5W1 Combo-D FEMALE

Pin #	Monitor Signal
1	Select Switch Return
2	+28V DC Input
3	Select Switch
4	DC Return
A1 Signal	Video Signal Input
A1 Shield	Video Ground
Shell	Chassis Ground

Note: Base Receptacles sold separately.

- * Note: If monitor is a select switch version then pins 4 & 5 are normally open and closed for 200 ms when the select switch is pressed. If monitor is not a select switch version then pins 4 & 5 are internally connected.

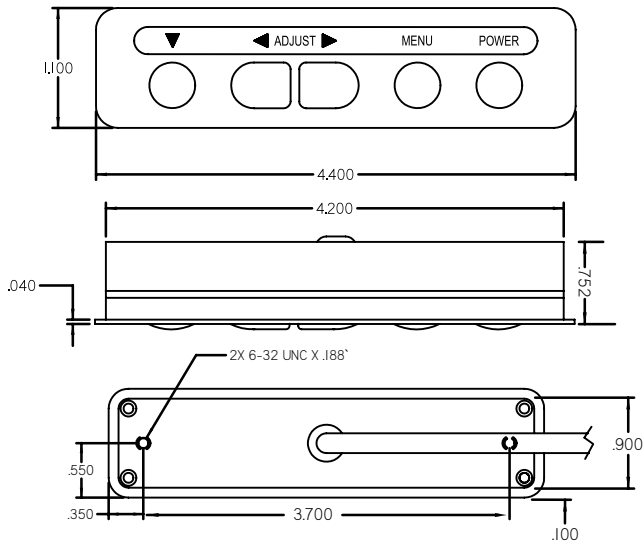
External Control Interface (0300-406)

The external control interface is a 9-pin standard density

D-subminiature male connector. (Available in Bulkhead only)

Pin	Control Signal
1	Ground (SIGNAL RET)
2	RESERVED
3	MENU DOWN/ SELECT
4	ADJUST +
5	POWER ON/ OFF
6	RESERVED
7	RESERVED
8	ADJUST -
9	MENU ON/ OFF

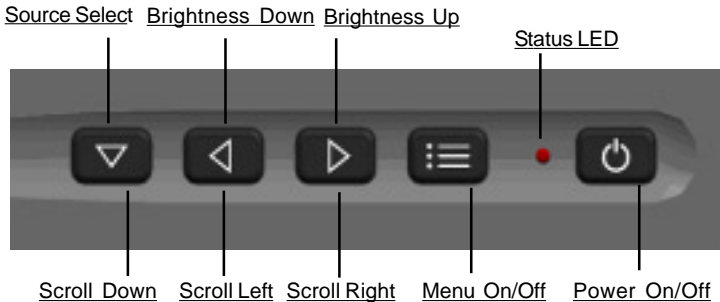
External Control Dimensions (Inches)



Operation

8.4" Monitor Button functions

Hot key buttons



Menu Buttons

Operation

On Screen Display (OSD) Main Menu

The On Screen Display (OSD) provides a set of menus that enable you to adjust or view monitor features. Main menu selections lead to submenus with additional choices. Press the Menu button on the switch panel to see the Main menu.

Menu option	Description
Brightness	Increase or decrease picture brightness using Right or Left arrows
Contrast	Increase or decrease using Right or Left arrows
Color	Increase or decrease using Right or Left arrows
Tint	Increase or decrease using Right or Left arrows
Sharpness	Increase or decrease using Right or Left arrows (Scale 1-5)
Backlight Dimming	Increase or decrease using Right or Left arrows
Advanced Menu	Takes you to Advanced sub menu

Advanced Menu

Menu option	Description
Menu Time-out	Change time before menu will time-out
Select Auto On	Turns auto on at power up on or off
Restore Default	Restores factory setting
Monitor Info	Takes you to Monitor Info sub menu
Back	Return to main menu

Operation (Cont)

Monitor Info Menu

Menu option	Description
Life Timer	Displays monitor's minute/hour timer
SW Revision	Displays software revision
Power On/Off	Displays power cycles
Source	Displays current video format
Temperature Menu	Takes you to Temperature sub menu
Back	Return to Advanced menu

Temperature Menu

Menu option	Description
Current Temperature	Displays monitor's current temperature
Max Temperature	Displays monitor's maximum average Temperature
Min Temperature	Displays monitor's minimum average Temperature
# of Over Temp	Displays monitor's number of over Temperature shutdowns
# of Under Temp	Displays monitor's number of under Temperature shutdowns
Back	Return to monitor info menu

Specifications

LCD Performance

Screen Resolution (pixels) 640 w x 480 h

Display Viewing Area 6.73 x 5.05 in

Viewing Angle (At contrast ratio 10:1)

Horizontal $\pm 55^{\circ}$

Vertical $+40^{\circ}$ up -70° down

Contrast Ratio 200:1 (Min) 500:1 (Typ)

Backlight Lamp Life (hours) 50000 hrs

Screen Brightness 360 (Min) 450cd/m² (Typ)

Mechanical Packaging

Arm Mount Weight (See Appropriate Drawing)

Bulkhead Weight 2.9 lbs $\pm 5\%$

Power Requirements 28VDC 350 mA Nominal

Video Performance

Video Standards NTSC, PAL, SECAM

Video input 1V Peak-to-Peak, 75 Ohms

Operating Temperature $0^{\circ}\text{C} - 50^{\circ}\text{C}$ Free Air Installation

$0^{\circ}\text{C} - 40^{\circ}\text{C}$ Insulated Installation

Warranty 2yr

8.4" Monitor DO-160D Test Matrix

Section	Description	Category
4	Temp & Alt	A1
5	Temp Variation	C
6	Humidity	A
7	Op Shock & Crash Safety	B
8	Vibration	SB
9	Explosion Proofness	X
10	Waterproofness	X
11	Fluids Susceptibility	X
12	Sand & Dust	X
13	Fungus Resistance	X
14	Salt Spray	X
15	Magnetic Effect	Z
16	Power Input	AB
17	Voltage Spike	B
18	AF Cond Suscept – Pwr	Z
19	Induced Signal Suscept	Z
20	RF Suscept (Cond&Rad)	TTX
21	Emission of RF Energy	M
22	Lightning Induced Trans	X
23	Lightning Direct Effects	X
24	Icing	X
25	Electrostatic Discharge	A

X= Not Tested

Technical Support

For field support or to order parts, contact Rosen Aviation
Displays at: 1-888-668-4955

or visit us at: www.rosenaviation.com

Troubleshooting

8402 Trouble shooting

<u>PROBLEM</u>	<u>POSSIBLE SOLUTION</u>
No power LED does not come on	<ul style="list-style-type: none">• Verify that the pinout is correct . Push and hold the power switch for about one second.• Verify Monitor is fully inserted into base receptacle.
No Video Displayed on screen	<ul style="list-style-type: none">• Verify that the pinout is correct.• Verify that the video source is on and has a tape or DVD installed.• Verify video signal at monitor end, Use an oscilloscope or another monitor.
Screen is black	<ul style="list-style-type: none">• Verify that the monitor is getting power (LED on) and the pinout is correct.• Verify that the video source is on and has a tape or DVD installed.• Verify all connections
Screen is blue	<ul style="list-style-type: none">• Verify signal at monitor end, Use an oscilloscope or another monitor.• Verify that the pinout is correct.• Verify that the video source is on and has a tape or DVD installed.
Red LED is on	<ul style="list-style-type: none">• Monitor is connected to 28 volts but is either switched off or is not receiving a video signal
Image is distorted	<ul style="list-style-type: none">• Verify that the pinout is correct.• Verify that a signal is present and accurate.• Examine system for pinched or damaged cables.
Notes	<ul style="list-style-type: none">• Always use an oscilloscope to verify video signals.• Always use a multimeter to verify voltages.• Always check actual results against requirements in the Technical Manual.

Technician mode

Technician mode provides the ability to customize the Menu by restricting access to specified options. This section describes how to enter and exit technician mode and how to customize the main menu.

1. Entering technician mode:

Apply 28V to the monitor, wait until green light appears (if monitor is in auto-off, press the power button). Once the monitor is powered up and the green power light is on, press the power button briefly to turn it off, then press and hold the power button down for 10 seconds and release it. (More than 10 seconds is OK). The monitor will now be operating in technician mode. To verify the monitor has entered technician mode, press the “menu” button and you should see the word “on” or “off” to the left of each menu item in the main menu.

Example of main menu when starting technician mode:

On Brightness
On Contrast
On Color
On Tint
On Sharpness
On Backlight
Off Advanced >>

2. Exiting technician mode:

To exit the technician mode, simply turn the power off and on again either with the power button or through the 28V supply.

3. Enabling/Disabling Individual Menu Items:

The cursor works via the “scroll” button as in the normal menu mode. To disable a menu item, move the cursor to that line using the “scroll” button, hold the “scroll” button down for at least 5 seconds, then release it. The cursor highlight should advance to the next menu item and the word “off” should appear to the left of the disabled menu item.

To enable an item that has previously been turned off, follow the same procedure as above. Highlight the desired item, hold down the “scroll” button for 5 seconds, and release. The word “on” should now appear to the left of the enabled menu item.

When the monitor is returned to normal mode, any items which were disabled in technician mode will no longer be available in the main menu. The menu will shrink to the size needed to display any enabled items. It is possible to disable all of the main menu items. In this case there will be no user accessible functions in the normal monitor mode.

Note that the left and right arrow “hot key” functions are always assigned to the backlight brightness function. If the backlight menu item is disabled through the technician mode, the hot key feature will not be available.

Examples:

Technician Mode

On Brightness

On Contrast

On Color

Off Tint

Off Sharpness

Off Backlight

Off Advanced

User Mode:

Brightness

Contrast

Color

Disclaimer

All information, including illustrations, is believed to be reliable. Users and/or installers, however, should independently evaluate the suitability of each product for their application. Rosen makes no warranties as to the accuracy or completeness of the information, and disclaims any liability regarding its use or installation. Rosen's only obligations are those in the Rosen Standard Terms and Conditions of Sales for this product, and in no case will Rosen be liable for any incidental, indirect or consequential damages arising from the sale, resale, use or misuse of the product. Specifications are subject to change without notice. Rosen reserves the right to make changes - without notification to buyer - to materials or processing that do not affect compliance with any applicable specifications.